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Mineral Resource Report

PRELIMINARY REVIEW OF NEW BRUNSWICK'S MINERAL INDUSTRY *2001*

Edited by
Barbara M.W. Carroll

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Preliminary Review of New Brunswick's Mineral Industry *2001*

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Hon. Jeannot Volpé
Minister of Natural Resources and Energy

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SUMMARY

The preliminary value of New Brunswick's mineral production for 2001 is $789 196 489, an increase of 2% over the final value of $772 546 475 for 2000. This was due mainly to improved performance in the metals market and a weaker Canadian dollar.

Metals accounted for 71% ($562 325 882) of the total value of production. Of these, zinc, lead, and copper made the largest contribution. Noranda Inc. operated the Brunswick No. 12 mine and Belledune smelter. Operations continue to be suspended at the Caribou and Restigouche mines (Caribou Mine Division of CanZinco Ltd.), Mount Pleasant mine (ADEX Mining Corporation), and the Lake George antimony mine (APOCAN Inc.). Full site reclamation was completed at the Murray Brook mine (Murray Brook Resources Inc.), which suspended operations in 1998.

Nonmetallic minerals contributed 22% ($170 390 891) to the value of production. The main commodities are potash, peat, salt, and sulphur in smelter gas. Drilling on the potash lease of Potash Corporation of Saskatchewan Inc. (New Brunswick Division) near Sussex confirmed the presence of natural gas. Additional potash was encountered during the drilling. Five limestone quarries were active: Saint John (Brookville Manufacturing Ltd.; Kingsway Materials Ltd.), Havelock (Graymont (NB) Inc.; Lafarge North America Inc.), and Sormany (Elmtree Resources Ltd.). Upper Kent Lime Works Ltd. produced marl near Woodstock. Atlantic Silica Inc. and Chaleur Silica Ltd. produced silica from the Cassidy Lake and Bass River areas, respectively. Nineteen companies produced peat valued at $47 417 277 from 37 peatlands in New Brunswick.

Coal was valued at $19 781 000. N.B. Coal Limited has continued to reclaim lands disturbed by mining.

Structural materials such as lime, stone, and sand and gravel contributed about 5% ($36 698 716) to the value of production. Maritime Stone Works Inc. (Dieppe) is considering expansion of quarry operations into the Miramichi area. Two new flagstone producers are operating in the Hillsborough (T.P. Downey & Sons) and Grand Lake (Grand Lake Flagstone) areas.

The focus of exploration in northern New Brunswick was base metals. Hudson Bay Exploration and Development Co. Limited, Noranda Inc. and CanZinco Limited reported the largest amount of exploration. Diamond drilling was carried out on a number of properties. Trenching and geophysical surveys were also conducted on some properties. Grade and tonnage figures have been reported following drilling on the Railroad property, the O'Hearn [sic] zone, the Lewis Brook Pb–Zn property, and near the Mount Fronsac North deposit and Belledune area.

Precious metals and base-metal sulphides were the focus of exploration in southern New Brunswick. Most activity was related to the expansion of resources on known gold properties and the search for new gold occurrences in the southwestern part of the province. Recently, the potential for substantial gold deposits associated with Sn–W-bearing granites has been demonstrated. Gold may also be associated with granite of the Pokiok Batholith. Much interest has been shown in these and other areas in the region that may host additional intrusion-related gold occurrences.

A new limestone-gypsum operation is being established in northwestern New Brunswick. Aggregate exports have reached a record level in 2001.

Potash Corporation of Saskatchewan Inc. (PCS), Jean Mariadassou, Corridor Resources Inc., Corridor Resources Inc./PCS, Columbia Natural Resources Canada, Ltd., Corridor/CNRC, Norton Energy Inc., and J.A. Seglund Inc. held oil and natural gas licences to search in 2001. J.A. Seglund Inc., RHT Enterprises Ltd., Irving Oil Limited, and Columbia Natual Resources Canada, Ltd. held oil and natural gas leases. Three-D GeoConsultants Limited held one bituminous shale licence to search. St. Clair Pipelines (1996) Ltd. and Intragaz held one and six underground storage licences, respectively.

SOMMAIRE

La valeur de la production minérale du Nouveau-Brunswick de 2001 se chiffre à 789 196 489 $, ce qui représente une augmentation de 2 % par rapport à la valeur finale de la production de 2000, qui avait atteint 772 546 475 $. Cela a été principalement dû à un meilleur rendement du marché des métaux et au cours plus faible du dollar canadien.

Les métaux, principalement le zinc, le plomb, et le cuivre, ont représenté 71 % (562 325 882 $) de la valeur totale de la production. La Noranda Inc. a exploité la mine Brunswick nº 12 et sa fonderie Belledune. Les activités aux mines Caribou et Restigouche (Mine Caribou, filiale de la CanZinco Ltd.), à la mine du mont Pleasant (ADEX Mining Corporation) et à la mine d'antimoine du lac George (APOCAN Inc.) sont toujours suspendues. On a terminé la remise en état du site de la mine de Murray Brook Resources Inc., dont les activités ont cessé en 1998.

Les minéraux non métalliques ont représenté 22 % (170 390 891 $) de la valeur totale de la production. Les principaux produits exploités sont la potasse, la tourbe, le sel et le soufre du gaz de four de fusion. Les forages effectués sur la concession relative à la potasse de Potash Corporation of Saskatchewan Inc. (filiale du Nouveau-Brunswick), près de Sussex, a confirmé la présence de gaz naturel. Les forages ont aussi révélé la présence de plus de potasse. Cinq carrières de calcaire ont été actives, soit celles de Saint-Jean (Brookville Manufacturing Ltd.; Kingsway Materials Ltd.), de Havelock (Graymont (NB) Inc., Lafarge North America Inc.) et de Sormany (Elmtree Resources Ltd.). La société Upper Kent Lime Works Ltd. a produit de la marne près de Woodstock. L'Atlantic Silica Inc. et la Chaleur Silica Ltd. ont produit de la silice des secteurs du lac Cassidy et de Bass River, respectivement. Dix-neuf entreprises ont produit de la tourbe évalué à 47 417 277 $ à partir de 37 tourbières du Nouveau-Brunswick.

On estime la valeur de la production de charbon à 19 781 000 $. La N.B. Coal Limited a continué à restaurer les terres perturbées par l'extraction minière.

Les matériaux de construction comme la chaux, la pierre, le sable et le gravier, ont représenté environ 5 % (36 698 716 $) de la valeur totale de la production. La Maritime Stone Works Inc. (Dieppe) envisage une expansion de ses activités d'exploitation de carrière dans la région de Miramichi. Deux nouveaux producteurs de dalles sont en activité dans les régions de Hillsborough (T.P. Downey & Sons) et du Grand Lac (Grand Lake Flagstone).

La prospection dans le Nord de Nouveau-Brunswick a principalement été axée sur les métaux communs. La Hudson Bay Exploration and Development Co. Limited, la Noranda Inc. et la CanZinco Limited ont été les sociétés les plus actives à cet égard. Des travaux de forage au diamant ont été exécutés sur un certain nombre de concessions. On a également effectué des fouilles en tranchées et des levés géophysiques sur certaines concessions. Les chiffres sur la teneur et le tonnage ont été dévoilés à la suite du forage sur les biens Railroad, la zone O'Hearn [sic], les biens de Pb–Zn du ruisseau Lewis, et près du gisement du mont Fronsac Nord et du secteur de Belledune.

Les métaux précieux et les sulfures de métaux communs ont constitué le principal objectif des travaux de prospection réalisés dans le Sud du Nouveau-Brunswick. La majeure partie de l'activité a été reliée à l'expansion des ressources des concessions aurifères reconnues et à la recherche de nouvelles venues d'or dans le Sud-Ouest de la province. Les chercheurs ont récemment démontré l'existence possible de gîtes aurifères substantiels associés aux granites abritant du Sn–W. Une présence d'or pourrait également être associée au granite du batholite de

Pokiok. Les sociétés ont fait preuve de beaucoup d'intérêt à l'égard de ces emplacements et d'autres secteurs de la région qui pourraient abriter des venues aurifères apparentées à des intrusions.

Une nouvelle exploitation de gypse et de calcaire démarre dans le Nord-Ouest du Nouveau-Brunswick. Les exportations d'agrégat ont atteint un niveau record en 2001.

La Potash Corporation of Saskatchewan Inc. (PCS), M. Jean Mariadassou, la Corridor Resources Inc., la Corridor Resources Inc./PCS, la Columbia Natural Resources Canada, Ltd., la Corridor/CNRC, la Norton Energy Inc., et la J. A. Seglund Inc. étaient titulaires de permis de recherche de pétrole et de gaz naturel en 2001. La J.A. Seglund Inc., la RHT Enterprises Ltd., l'Irving Oil Limited, et la Columbia Natural Resources Canada, Ltd. étaient titulaires des baux d'exploitation de pétrole et de gaz naturel. La Three-D GeoConsultants Limited était titulaire d'une permis de recherche de schistes bitumineux La St. Clair Pipelines (1996) Ltd. et l'Intragaz étaient, respectivement, titulaires d'un et six permis de stockage souterrain.

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Exploration Activities

METALLIC MINERALS

The Bathurst Mining Camp continued to be the dominant exploration area in New Brunswick but the Clarence Stream gold district is expanding as new and extended occurrences continue to be reported. Although 75% of the mineral claims in effect at year's end were in northern New Brunswick, 58% of the claims recorded during the year were in southern New Brunswick

Northern New Brunswick

The annual informal telephone poll for northern New Brunswick, taken by the New Brunswick Department of Natural Resources and Energy in October, indicated that exploration expenditures in the northern half of the Province for 2001 are approximately $5 000 000, down more than $3 000 000 from the previous year.

The **major companies** that were active in 2001 include Hudson Bay Exploration and Development Co. Limited, Noranda Inc. and CanZinco Ltd. Falconbridge Limited, Phelps Dodge Corporation of Canada Limited and Teck Exploration Ltd. continued to hold land positions but no work was carried out on their claims in 2001.

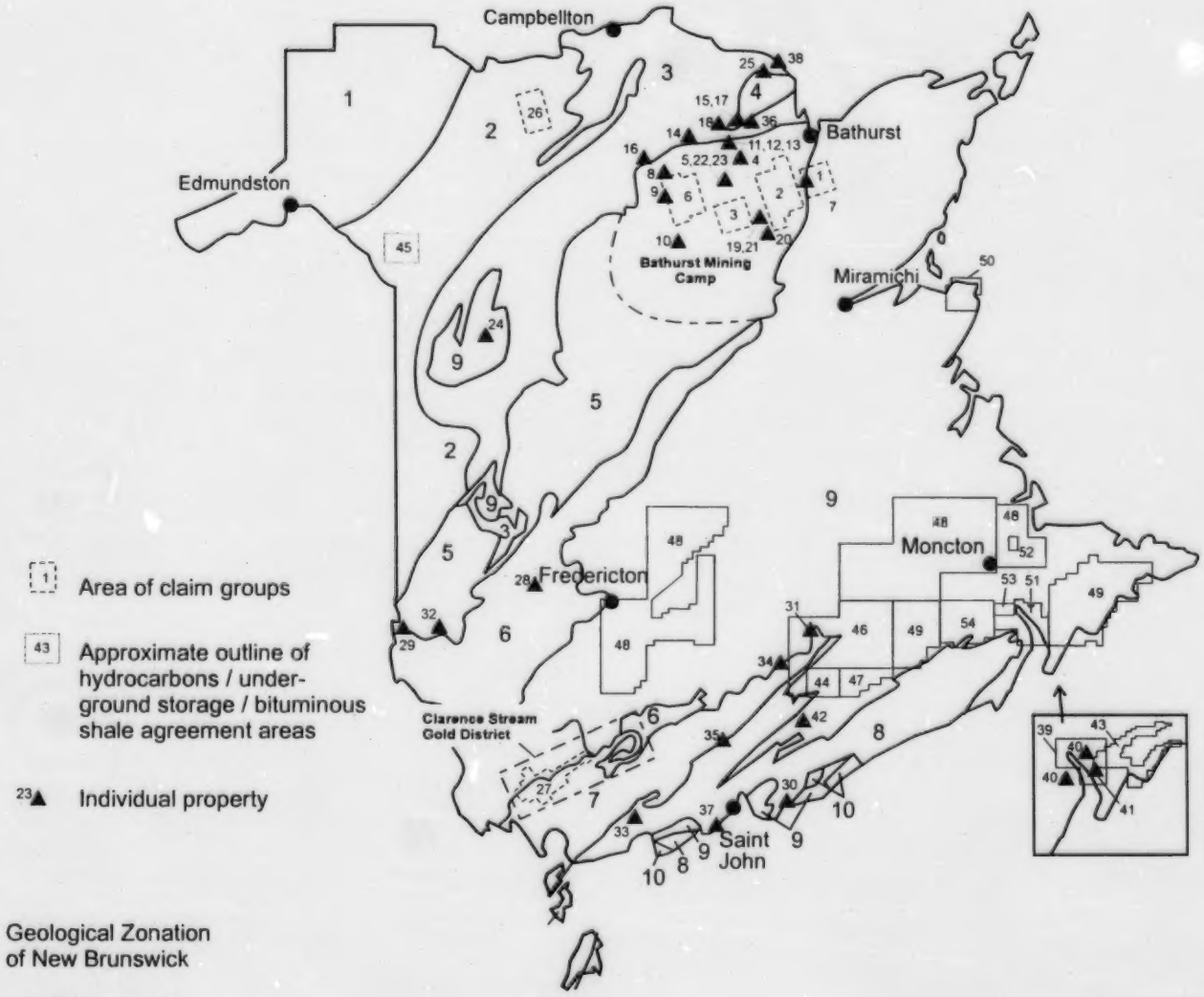
The active **junior companies** in 2001 include Eastmain Resources Inc., Slam Exploration Ltd., Heron Mines Limited, Aurogin Resources Ltd. and Omni Mines Ltd. They collectively spent approximately $1 000 000. All of these companies received funding under the New Brunswick Junior Mining Assistance Program (NBJMAP). Other juniors, such as Black Bull Resources Inc., Chapleau Resources Limited, Connecticut Development Corporation, Freewest Resources Canada Inc., Major General Resources Limited, Marshall Minerals Corp., Mountain Lake Resources Inc. and PGE Resource Corporation held ground but little or no work was carried out on their claims during the year.

Major Companies Within the Camp: **Noranda Inc.** accounts for approximately $3 500 000 of the total exploration expenditure in northern New Brunswick, all of it within the Bathurst Mining Camp. From east to west, Noranda's land holdings are concentrated in six areas: Middle Landing–Lawson Brook, Brunswick–Portage River, Heath Steele, Middle River, Caribou–Indian Lake, and Mount Perley–Halfmile Lakes (Figure 1: 1–6). Notably, Noranda staked 89 new claims in 2001 but dropped significantly more claims, all of them in the Bathurst Mining Camp. Noranda had a total of 3777 claims in the camp on October 22nd when the news broke that the company's exploration office in Bathurst was closing.

Most of Noranda's work in 2001 was focused on the Middle Landing–Lawson Brook, Brunswick–Portage River, and Mount Perley–Halfmile Lakes areas (Figure 1: 1, 2, 6). Although in-hole, three-dimensional seismic surveys were planned for seven localities in the Brunswick–Portage River and Mount Perley–Halfmile Lakes areas, the work was done in only one locality, Halfmile Lakes, where staff from the Geological Survey of Canada carried out a test survey in one hole. However, the company contracted

Legend

1. Claims, Middle Landing–Lawson Brook area (Noranda Inc., Noranda Mining & Exploration Inc.)
2. Claims, Brunswick–Portage River area (Noranda Inc., Noranda Mining & Exploration Inc.)
3. Claims, Heath Steele area (Noranda Inc., Noranda Mining & Exploration Inc.)
4. Claims, Middle River area (Noranda Inc.)
5. Claims, Caribou–Indian Lake area (Noranda Inc., Noranda Mining & Exploration Inc.)
6. Claims, Mount Perley–Halfmile Lakes area (Noranda Inc., Noranda Mining & Exploration Inc.)
7. Claims, Key Anacon Mine (Hunter Brook Holdings Limited)
8. Claims, Mount Perley (Hudson Bay Exploration and Development Co. Limited)
9. Claims, Mount Moses area (Hudson Bay Exploration and Development Co. Limited)
10. Claims, Kenny Lake (Hudson Bay Exploration and Development Co. Limited)
11. Claims, Wildcat (CanZinco Ltd.)
12. Claims, Carroll–Roller (CanZinco Ltd.)
13. Claims, Murphy (CanZinco Ltd.)
14. Claims, Caribou North (CanZinco Ltd.)
15. Claims, Armstrong (CanZinco Ltd.)
16. Claims, Restigouche Project (CanZinco Ltd.)
17. Claims, Rocky Turn (CanZinco Ltd.)
18. Claims, Orvan Brook (CanZinco Ltd.)
19. Claims, Railroad (Eastmain Resources Inc.)
20. Claims, Sprig Brook (Eastmain Resources Inc.)
21. Claims, CNE (Eastmain Resources Inc.)
22. Claims, 40 Mile Brook (Slam Exploration Ltd.)
23. Claims, Strachens Lake–Ahearn Brook area (Slam Exploration Ltd.)
24. Claims, Lewis Brook (Slam Exploration Ltd.)
25. Claims, Belledune area (Heron Mines Ltd.)
26. Claims, Simpsons Gulch–Boland Brook area (A. Wayne Lockhart)
27. Claims, Clarence Stream area (Freewest Resources Canada Inc. and others)
28. Claims, Springfield (M. Stewart)
29. Claims, Golden Ridge (Freewest Resources Canada Inc.)
30. Claims, Gold Brook area (Pro-Max Resources Inc.)
31. Claims, Marrtown area (Pathfinder Resources Ltd.)
32. Claims, Eel River area (PGE Resource Corp.)
33. Claims, New River (PGE Resource Corp.)
34. Claims, Annidale area (PGE Resource Corp.)
35. Claims, McKeel Lake area (Annapolis Valley Goldfields Inc.)
36. Claims, Sormany area (Elmtree Resources Ltd.)
37. Coleson Cove generating station
38 Port of Belledune
39. Bituminous shale licence to search (Three-D GeoConsultants Limited)
40. Bituminous shale development permits (A.A. (NB) Inc.)
41. Underground storage exploration licence (St. Clair Pipelines (1996) Ltd.)
42. Underground storage exploration licence (Corridor Resources Inc.)
43. Underground storage exploration licences (Intragaz)
44. Oil and natural gas licence to search (Potash Corporation of Saskatchewan Inc.)
45. Oil and natural gas licence to search (Jean Mariadassou)
46. Oil and natural gas licences to search (Corridor Resources Inc.)
47. Oil and natural gas licence to search (Corridor Resources Inc. and Potash Corporation of Saskatchewan Inc.)
48. Oil and natural gas licences to search (Columbia Natural Resources Canada, Ltd.)
49. Oil and natural gas licences to search (Columbia Natural Resources Canada, Ltd. and Corridor Resources Inc.)
50. Oil and natural gas licence to search (Norton Energy Inc.)
51. Oil and natural gas licence to search and leases (J.A. Seglund Inc.)
52. Oil and natural gas leases (RHT Enterprises Ltd.)
53. Oil and natural gas lease (Irving Oil Limited)
54. Oil and natural gas lease (Columbia Natural Resources Canada, Ltd.)



Geological Zonation of New Brunswick

1. Edmundston
2. Kedgwick
3. Tobique-Chaleur
4. Elmtree
5. Miramichi
6. Fredericton
7. Passamaquoddy
8. Saint John
9. Maritimes Basin
10. Fundy Basin

Figure 1. Highlighted exploration properties in New Brunswick, 2001.

Quantec to do test surveys in each of the three areas using its time-domain, ground electromagnetic, and distributed-array system (DAS).

Late in 2000, Noranda reached an agreement with Hunter Brook Holdings Limited, one of the Irving Group of companies, to explore the Key Anacon property (Figure 1: 7) at Middle Landing, which is contiguous with its Middle Landing–Lawson Brook claim block. Eight holes, totalling 7341 m, were drilled early in 2001; approximately 15 900 m were drilled by year's end on this property.

In the Brunswick–Portage River belt (Figure 1: 2), 12 holes totalling approximately 1465 m were drilled west and south of the No. 12 Crown Grant. Another 17 holes totalling 4475 m were drilled in the southern part of the belt, mostly on the Narrows property.

In the Mount Perley–Halfmile Lake belt (Figure 1: 6), further drilling was carried out in the vicinity of the new Mount Fronsac North deposit, where approximately 17 000 m of drilling was completed in 2000. That drilling outlined 14 000 000 t of low-grade massive sulphides, including about 1 200 000 t grading 0.14% Cu, 2.18% Pb, 7.65% Zn, 40.3 g/t Ag and 0.40 g/t Au. Twelve holes totalling 2883 m were drilled in 2001.

Hudson Bay Exploration and Development Co. Limited conducted approximately 70 line-kilometres of horizontal-loop electromagnetic and magnetometer surveys on eight grids, and collected 1500 soil samples on five of them. Five holes, totaling 664 m, were drilled to test Spectrum airborne electromagnetic anomalies in the Mount Perley, Mount Moses, and Kenny Lake areas (Figure 1: 8–10). The anomalies were explained by graphitic sedimentary rocks.

CanZinco Ltd. conducted 23 line-kilometres of induced polarization on the Wildcat, Carroll–Roller, and Murphy properties (Figure 1: 11–13) in the northern part of the Bathurst Mining Camp. Several anomalies were outlined that warrant further work. CanZinco also contracted Eastern Geophysics to conduct Pulse electromagnetic surveys in four previously drilled holes on its Caribou and Armstrong properties (Figure 1: 14, 15). The preliminary results indicate at least one strong off-hole anomaly in hole 6006-98-9. The company also drilled five holes, totalling 1304 m, to test known induced polarization anomalies; two were drilled on the Restigouche property (one 600 m south and the other 800 m east of the deposit; Figure 1: 16). The other three were drilled on the Wildcat, Rocky Turn, and Orvan Brook properties (Figure 1: 11, 17, 18).

Junior Companies Within the Camp: **Eastmain Resources Inc.**, and option-agreement partner **Stratabound Minerals Corp.**, have the second largest land position (1179 claims) in the Bathurst Mining Camp after Noranda. Late in 2000, the company announced that Billiton would fund a drilling program on the Railroad property (Figure 1: 19) through a $700 000 private placement. The program began in June with two drill rigs, one testing the Railroad deposit and the other testing five targets elsewhere on the property. Twenty-three holes, totalling about 7000 m, were completed by late summer, 6 on the deposit and 17 elsewhere. Narrow, high-grade intercepts were encountered at the Railroad deposit (e.g., hole RRD-01-01 cut 0.5 m grading 33.4% Zn, 17.0% Pb, 0.4% Cu and 342 g/t Ag in a 10.3 m interval grading 5.3% combined Pb + Zn), which appears to be hosted by rocks of the Flat Landing Brook Formation. Three of the other targets yielded geologically significant results. At the Railroad Iron Formation Horizon, hole RR-01-06 cut 16 m of chlorite–magnetite iron formation near the top of the Nepisiguit Falls Formation (i.e., the Brunswick Horizon). At the Railroad Footwall Zone, drilling outlined an altered and sulphide-bearing zone about 600 m long within Nepisiguit Falls rocks. At Sprig Brook (Figure 1: 20), hole

RR-01-12 intersected 20 m of disseminated and stringer sulphides. No further drilling is scheduled for 2001 on the Railroad property but the company plans to drill six holes on the CNE (Stratabound) property (Figure 1: 21) to test induced polarization targets.

Slam Exploration Ltd. added 25 claims to its 40-Mile Brook property (Figure 1: 22) near the Wedge deposit and staked 109 claims in the Strachens Lake–Ahearn Brook area (Figure 1: 23). Slam focused on the latter property and carried out a trenching program to expose the known O'Hearn [sic] massive-sulphide zone. Spectacular grades were obtained over narrow widths along a strike length of about 37 m. Values ranging from 44.2% to 56.1% combined Pb + Zn, and up to 520 g/t Ag were reported over widths of 0.43 m to 0.98 m. This sulphide zone appears to be hosted by rocks of the Flat Landing Brook Formation. Another 19 trenches were dug elsewhere on the Strachens Lake–Ahearn Brook property to test previously identified targets. As a result, massive sulphide boulders were uncovered 60 m north of the zone and a new occurrence was discovered 250 m east of it, from which a grab sample ran 2.3% combined Pb + Zn.

Companies Outside the Camp: Slam Exploration Ltd. dropped its large land position near the Clarinda gold property at Lower Tetagouche Lake and focused on its Lewis Brook Pb–Zn property (Figure 1: 24) near Mount Costigan. Seven holes, totalling 763.8 m, were drilled on this property to test a bonanza-grade silver occurrence that was trenched in 2000. The best intersection was in hole LB0010 where a 1.2 m interval (73.5–74.7 m) graded 1.44% Pb, 1.18% Zn and more than 1700 g/t Ag.

Heron Mines Ltd. and joint-venture partner **Aurogin Resources Ltd.** announced in February that they had completed a 750 line-kilometre (50 km line spacing), helicopter-towed, time-domain electromagnetic (AEROTEM) survey, including magnetics, over their 283-claim property near Belledune (Figure 1: 25). A previously unknown electromagnetic anomaly, with a strike length of about 250 m, was detected and in late March to early April was tested by three drill holes without any ground truthing of the anomaly. Hole #3 intersected vein–stockwork mineralization between 3 and 287 m. The best assays reported within this interval ranged from 1.75 g/t to 4.9 g/t Au over 1.0 to 2.5 m. Subsequently, hole #3 was deepened to 354 m and both surface and down-hole Pulse electromagnetic suveys were carried out. A strong off-hole anomaly was detected at about 170 m in hole #3; consequently, another hole is planned to test this anomaly. Meanwhile, another 259 claims were staked to the west of the existing property and another 800 line-kilometres of airborne geophysics (AEROTEM and magnetic) were flown in the early fall of 2001. Aurogin reported that eight new strong conductors have been detected and that ground examination is underway to better define drill targets.

Omni Mines Ltd. plans to drill-test one or two localities on its properties in the Simpsons Gulch–Boland Brook area (Figure 1: 26). The objective is to determine if the large total-field magnetic anomaly in that area is caused by a buried intrusion, which may be the source of the nickel–cobalt stream-sediment anomalies.

Southern New Brunswick

Most exploration activities in southern New Brunswick for the 2001 calendar year were related to the delineation of reserves on known gold deposits and the discovery of new gold occurrences, particularly in the vicinity of Clarence Stream, east of St. Stephen (Figure 1). The intensity of exploration and the number of new finds in and around tin–tungsten-bearing felsic intrusions associated with the Saint George

Batholith leave little doubt that a world-class, granite-related gold district is emerging in this part of the province. About 3400 claims had been staked by year's end in southern New Brunswick, well over half of which are for gold. More than $1 000 000 was expended on these exploration projects in 2001. It is anticipated that there will be several hundred more claims recorded for gold in the region in 2002, and that the exploration expenditures will increase accordingly.

Gold Exploration in the Clarence Stream District: The exploration effort in the Clarence Stream area has been spearheaded by several junior mining organizations and by numerous local prospectors and their companies. **Freewest Resources Canada Inc.**, one the main players, has drilled 64 holes to date on its property at Clarence Stream (Figure 1: 27) where potentially mineable, high-grade mineralization was intersected in parts of the East, Central, Cox, West and North zones. Two very promising new discoveries, anomalies A and B, have been located on the property about 3 and 2 km northwest and southwest of the original showings, respectively. All of these occur within metamorphosed volcanosedimentary sequences and metagabbros peripheral to granitoid intrusions.

Other junior companies working in this area include **Rubicon Minerals Corporation**, **Union Gold Inc.**, **Fancamp Resources Ltd.**, **Murgor Resources Inc.**, **Golden Hope Mines Limited**, and **PGE Resource Corporation**. Many of these companies have also conducted extensive exploration on their properties with promising results. For example, immediately southwest and along strike of Freewest's discovery zone, Union Gold Inc. has delineated highly prospective drill targets based on detailed geochemical and geophysical surveys. Another example is Fancamp Resources Ltd. who discovered new gold showings in a similar geological environment several kilometres along strike to the northeast (Figure 1: 27).

A group of local prospectors and explorationists, including **William Gardiner** (Southfield Resources Ltd.), **Emilio Doiron** (Pro-Max Resources Inc.), **Terry Mersereau** (Northeast Exploration Services Limited), **Peter Fenety**, **David Stevens**, and **Raymond Thorn**, have been very active on several claim groups in the district. The group has delineated numerous zones with high potential based on geochemical surveys, geological mapping and prospecting.

Gold Exploration Outside the Clarence Stream District: Other gold properties associated with felsic to intermediate intrusions in southern New Brunswick were also investigated during 2001, particularly in the contact zone of the Pokiok Batholith near Springfield and in the Poplar Mountain area, both west of Fredericton (Figure 1: 28, 29). **Merton Stewart**, working with TNR Resources Ltd., conducted geochemical surveys and a drilling program on the Springfield property (Figure 1: 28). Significant gold mineralization was located on the property and it is anticipated that this work will generate additional exploration in this region. **Freewest Resources Canada Ltd.** maintains large holdings in the Poplar Mountain area (Figure 1: 29), where widespread gold mineralization in structural zones are intimately associated with a high-level, intermediate intrusion. At year's end, the company was seeking joint venture partners to further develop this huge resource.

South of Saint John in a northeasterly trending belt along strike from the Cape Spencer gold mine, **Pro-Max Resources Inc.** continued its work on properties in the vicinity of Gold Brook (Figure 1: 30) and has discovered several high-grade gold showings along shear zones in this gold-rich thrust belt. Continuity of well-defined structures hosting auriferous veins has been demonstrated over a distance of more than 2 km on the property.

In the latter part of 2001, **Southfield Resources Ltd.** and **Pro-Max Resources Inc.** have discovered a gold–antimony system associated with shear and stockwork zones in a highly altered gabbro–basalt complex north of Sussex at Marrtown (Figure 1: 31). Pathfinder Resources Ltd. will be conducting further exploration on the property. Results of prospecting are preliminary, but initial results indicate that there could be a very significant gold-bearing system in this previously unrecognized geological environment in southern New Brunswick.

Exploration for Other Commodities: Exploration for base-metal sulphides also continued in a few areas of southern New Brunswick. **Patrick Marr** continued work on his Eel River claims west of Fredericton (Figure 1: 32). He has been successful in tracing stratiform massive sulphide horizons across his claim group and has delineated drill targets based on geophysical surveys. **PGE Resource Corp.** also continued working on its properties at New River and Annidale (Figure 1: 33, 34), west and north of Saint John, respectively. Both these areas have good potential for volcanogenic massive sulphide deposits when compared to similar environments that contain known deposits to the southwest in Maine.

Annapolis Valley Goldfields Inc. has conducted a limited amount of exploration for tantalum in the region. Targets for a planned drill program have been outlined in granites on the company's McKeel Lake property, north of Saint John (Figure 1: 35). This granite hosts the only tantalum-bearing rare metal occurrence in the region.

INDUSTRIAL MINERALS

Exploration and development activity related to New Brunswick's industrial rock and mineral resources continued at a respectable pace throughout 2001 with much attention directed to agricultural and construction materials. On the agricultural side, Elmtree Resources Ltd. has been exploring an interesting dolomite occurrence (Figure 1: 36) a few kilometres to the east of its Sormany limestone quarry. More work is planned for 2002.

The recent interest by NB Power in seeking a supply of limestone as part of a plan to refurbish the Coleson Cove Generating Station (Figure 1: 37), 15 km west of Saint John, could impact the limestone industry in the province. NB Power is evaluating the merits of converting its present fuel source for this station to an Orimulsion™ fuel. The proposed refurbishment project, which could begin as early as 2004, involves the installation of a flue-gas desulphurization unit that would utilize between 200 000 and 300 000 t of limestone annually to reduce atmospheric sulphur emissions.

On the construction and related materials side, exploration and development of the Province's aggregate resources continued at record levels throughout the year. Although much of this was related to the construction of the natural gas pipeline and a new 195 km four-lane highway in southern New Brunswick, considerable interest has been shown in aggregate materials that can be exported from the Province's ports, particularly the Port of Belledune (Figure 1: 38).

New Brunswick's diverse geology combined with a growing interest in natural stone products is providing opportunities for the exploration and development of relatively simple products like fieldstone, flagstone, crushed decorative aggregate, pebbles/cobbles/boulders, and other materials that have the

potential to fetch a surprisingly high dollar value/tonne. A few interested parties are examining the exploration and potential development initiatives of natural stone. For example, Canadian Landscape Granite has been looking at quarry waste rock in southwestern New Brunswick in order to produce and market several types of crushed and related stone products for ornamental uses.

HYDROCARBONS AND UNDERGROUND STORAGE

The posting of a 26 833 ha block (Figure 1: 39) south of Moncton in the late fall resulted in a bituminous shale licence to search being awarded to Three-D GeoConsultants Limited from Fredericton.

A.A. (NB) Inc., a New Brunswick company wholly owned by a Malaysian parent company, surrendered two bituminous shale development permits south of Moncton in the Albert Mines and Dover areas (Figure 1: 40). These permits have a total land area of 1077 ha.

All pipeline laterals to Fredericton, Moncton and Saint John were completed and placed into service from the Maritimes & Northeast pipeline that carries natural gas from Sable Island to New England.

St. Clair Pipelines (1996) Ltd. of Chatham, Ontario holds an 895 ha underground storage exploration licence in the Dorchester area (Figure 1: 41). A Windsor Group salt body underlies the area. St. Clair continues to assess the potential of the site.

Corridor Resources Inc. from Halifax made application for an underground storage exploration licence on a 15 086 ha block in the Smithtown–Salt Springs area, southwest of Sussex (Figure 1: 42).

Intragaz, from Trois-Rivières-Ouest, Québec, currently holds approximately 27 800 ha in underground storage exploration licences in southeastern New Brunswick (Figure 1: 43). The company was granted three-year exploration licences for Port Elgin–Coppermine (15 363 ha), Uniacke Hill (650 ha). Additional licences include Baie Verte (628 ha), Sackville (7457 ha), Jolicure (2356 ha) and Point de Bute (1347 ha). All licences are in good standing and the company is assessing the geological and geophysical data available for the salt bodies under the licences.

At year's end 2001, 710 410 ha of land in New Brunswick were held under a number of oil and natural gas licences to search and leases. Companies holding licences to search (Figure 1: 44–51) are: Potash Corporation of Saskatchewan Inc.[PCS] (9015 ha, near Sussex), Jean Mariadassou (10 521 ha, southeast of Edmundston), Corridor Resources Inc. (97 132 ha, north and west of Sussex), Corridor/PCS (14 784 ha, east of Sussex), Columbia Natural Resources Canada, Ltd.[CNRC] (381 999 ha, south and northwest, north and northeast of Moncton and near Fredericton), Corridor/CNRC (126 587 ha, southeast and southwest of Moncton), Norton Energy Inc. (11 265 ha, east of Miramichi), and J.A. Seglund, Inc. (8990 ha, south of Moncton). Companies holding leases (Figure 1: 51–54) are: J.A. Seglund Inc. (13 647 ha, on five blocks south of Moncton), RHT Enterprises Ltd. (2146 ha, northeast of Moncton), Irving Oil Limited (2153 ha, south of Moncton), and CNRC (33 411 ha, southwest of Moncton).

Jean Mariadassou, an independent, received approval to re-enter Notre Dame de Lourdes #1 (ONG 97-01) well in slate and limestone of the Matapedia Group southeast of Edmundston (Figure 1: 45).

Corridor entered into two farmout agreements; first with Globex Resources Ltd., a Calgary-based, junior exploration company, on three licences to search (ONG 01-06, ONG 01-07 and ONG 01-08) covering some 43 000 ha. Secondly, a farmout agreement with EOG Resources Inc., a company based in Calgary, will result in EOG operating certain of Corridor's 49 000 ha interest on licences to search (ONG 98-09, ONG 98-10, ONG 01-04) in the McCully natural gas discovery area (Figure 1: 46–47).

Corridor and joint venture partner PCS, following the discovery of natural gas at McCully, 11 km northeast of Sussex, spudded three additional wells. A directional stepout, Corridor/PCS McCully 2/A-67-2425/P-66 (ONG 98-09), was drilled from the same pad as the discovery well. Also, two delineation wells, Corridor/PCS McCully P-56-2425 (ONG 98-09) and C-75-2425 (ONG 01-04), were completed 2.2 km to the southeast and 4.5 km to the southwest of the discovery well, respectively. Corridor was granted geophysical licences and permits for two surveys totalling 146 km of reflection seismic. The survey locations are in Millstream and McCully areas (Figure 1: 46-47).

Late in the year, well licences were issued for Corridor Globex Case Settlement C-82-2424 (ONG 01-08) and EOG Corridor McCully D-48-2425 (ONG 98-09) (Figure 1: 46).

CNRC, a Fredericton-based company operating all the former lands held by MariCo Oil and Gas Corporation in the Marysville, Moncton, and Sackville subbasins as well as the Cocagne Graben, continued exploration with active drilling and geophysical programs. The drilling in the Monteagle area (ONG 97-06) resulted in completing the work on Columbia Monteagle G-56-2226 and J-67-2226 wells spudded late in the previous year. Two additional wells, Columbia *et al.* Monteagle A-47-2226 and L-18-2226 were licenced and drilled. CNRC was issued geophysical licences and permits for three surveys totalling 110 km of reflection seismic. The survey locations are in Sackville, Marysville and North Cocagne areas (Figure 1: 48).

CNRC and Corridor joint-ventured in drilling a well, Columbia/Corridor Copper Mine Hill 2/F-88-2329 (ONG 95-02), northwest of Sackville. The companies have 50% interest in licences to search ONG 95-02, ONG 95-03, ONG 95-04, ONG 95-05, ONG 97-02 and ONG 97-03 located in the Sackville and Moncton subbasins, southeast and southwest of Moncton, respectively (Figure 1: 49).

Norton Energy Inc. from Miramichi began assessment of its newly acquired licence to search, ONG 01-05 (Figure 1: 50).

PCS, with its office in Sussex, is evaluating the hydrocarbon potential of its new licence to search ONG 01-03 (Figure 1: 44) through previously shot seismic and geological assessment.

J.A. Seglund Inc.'s block of four leases lie to the southeast and east of the Stoney Creek oil and natural gas field (Figure 1: 51)

RHT Enterprises Ltd. six-section lease remains in good standing (Figure 1: 52).

Irving Oil Limited maintains the Stoney Creek field under lease 74-1. The 2153 ha lease, currently is in the eighth year of a ten-year term with production suspended. (Figure 1 : 53).

Former licences to search ONG 93-01 (10 057 ha) and ONG 93-02 (33 411 ha) were converted to leases at the end of their respective eight-year terms (Figure 1: 54). The agreements for the leases will meet the requirement under Regulation 2001-66 (Licence to Search and Lease Regulation) of the *Oil and Natural Gas Act*.

STATISTICS

Federal

Mineral Exploration Expenditure Surveys are carried out by Natural Resources Canada, assisted by the New Brunswick Department of Natural Resources and Energy (Mineral Information Services). The exploration expenditures are collected through two surveys each year. The Preliminary/Forecast in September followed by the Actual in January. Table 1 summarizes the results of the most recently available surveys.

Provincial

The Recorder's office maintains an electronic claim tracking system that is updated as applications to record are received, as claims are renewed, transferred, regrouped or expire, and as reports of work are received (Table 2, Figure 2). Lease and licence documents and agreements issued under the various Acts are maintained and updated as required.

Statistics (Table 2) indicate that overall claim-staking activity was down by approximately 10% in 2001.

Table 1. Summary of Mineral Exploration Expenditure Surveys
(Source: Natural Resources Canada)

Form No.	Survey Name	No. Surveyed	General Exploration	Mine Site Exploration	Total*
Ex-1	Preliminary 2000	57	8 400 000	2 000 000	10 400 000
Ex-3	**Actual 2000**	**50**	**9 600 000**	**2 400 000**	**12 000 000**
Ex-1	Forecast 2001	57	7 700 000	2 500 000	10 200 000
Ex-1	Preliminary 2001	40	6 200 000	2 100 000	8 300 000
Ex-1	Forecast 2002	40	2 200 000	1 100 000	3 300 000

* Survey includes overhead expenditures.

Table 2. New Brunswick Mineral Resource Allocation and Exploration Statistics, 2000 and 2001

Mineral Resource Allocation (total in effect at year's end unless specified for the year)	2000		2001	
	Number	Hectares	Number	Hectares
Mining Act				
Prospecting Licences Issued (year)	56	---	61	---
Claims Recorded (year)	3 084	49 344	2 232	35 712
Claims Expired (year)	2 905	46 480	3 288	52 608
Claims in Effect	15 030	240 480	14 251	228 016
Coal Agreements	4	58 917.6	4	58 917.6
Potash Exploration Agreements	0	0	0	0
Potash Leases	2	20 024.2	2	20 024.2
Mining Leases	17	12 528	17	12 691
Total Agreements and Leases (above)	---	91 469.8	---	91 632.8
Total in Effect	---	331 949.8	---	319 648.8
Oil and Natural Gas Act				
Licences to Search	26	592 091.5	32	659 051.4
Leases	6	7 890.1	8	51 358.7
Bituminous Shale Act				
Licences to Search	0	0	1	26 833
Development Permits	0	0	0	0
Leases	0	0	0	0
Underground Storage Act				
Storage Exploration Licences	7	28 791	7	28 791
Storage Licences	0	0	0	0
Construction Permits	0	0	0	0
Quarriable Substances Act				
Quarry Permits	256	---	248	---
Quarry Leases	16	608.155	16	608.155
Peat Exploration Licences	4	1955	3	1002
Peat Leases	33	13 303.6	36	14 433
Peat Options	14	4 604	11	3 580

Exploration Summary	2000		2001	
	Work Reported	Value	Work Reported	Value
Mining Act				
Reports of Work (RW)	77 reports filed	$7 458 948.26	96 reports filed	$6 076 250.85
Drilling Reported in RW	203 holes (14 698 m)	$1 256 181.81	247 holes (60 131 m)	$4 333 701.06
Potash Exploration	---	0	---	0
Oil and Natural Gas Act	11 wells (21 900 m*)	$10 000 000.00	8 wells (21 200 m*)	$23 169 162.00†
Bituminous Shale Act	---	0	---	0
Underground Storage Act	---	0	---	0

n/a not available
* licenced depth
† value at time of printing (final cost on some wells not available)

February , 2002

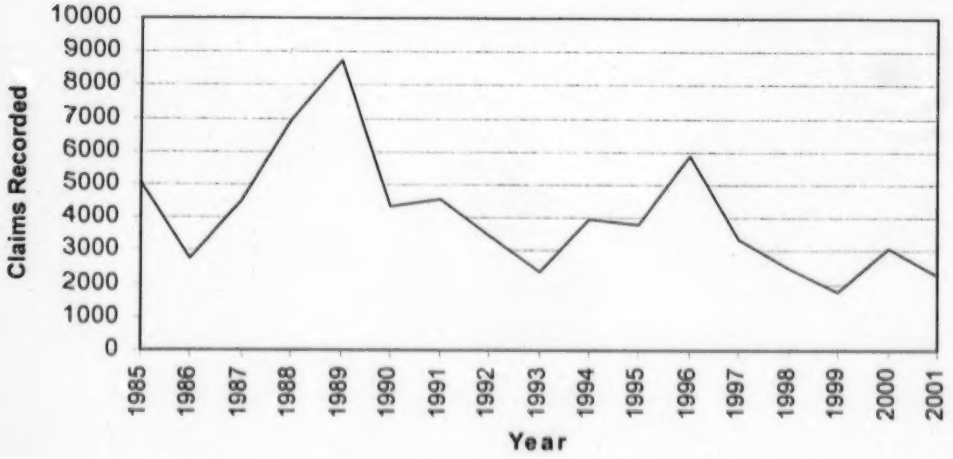


Figure 2. Mineral claims recorded, 1985–2001.

PROVINCIAL EXPLORATION AND DEVELOPMENT INITIATIVES

The New Brunswick Prospector Assistance Program (NBPAP) is a two-tier financial assistance program that offers up to $10 000 [a maximum of $3000 under Tier 1 for grass-roots exploration plus a maximum of $7000 under Tier 2 for claim holders with advanced exploration projects] to valid New Brunswick prospectors and small exploration companies. The Tier 1 funding helps defray prospecting costs such as chemical analysis, mileage, meals and claim registration, while the Tier 2 funding is mainly for professional services from accredited contractors. The program provided $50 000 in Tier 1 funding to 27 applicants and $120 000 in Tier 1 and 2 funding to 19 applicants in 2001. The average value of the grants was $1941 and $6144, respectively.

The New Brunswick Junior Mining Assistance Program (NBJMAP) is an assistance program for junior mining companies. It provides financial assistance of 50% of exploration costs up to a maximum of $40 000 per project. Funding in the amount of $350 000 was allocated for 2001–2002 by the Province, through the Regional Development Corporation. Nine applicants (10 projects) were approved for assistance.

Three introductory prospecting courses were held in February and March of 2001 in Bathurst, Fredericton, and Moncton. Four more introductory courses were held from October to December, 2001 in St-Quentin, Fredericton, Miramichi, and Moncton. An advanced prospecting course is being planned for March, 2002.

The Value-Added/Mineral Processing Program (VAMP), which was launched in 1996 in accordance with New Brunswick's Mineral Policy, is designed to provide funding on a shared basis for projects that could enhance the value of New Brunswick's minerals either by processing them to a higher level, or by improving the recovery of present products. In 2001, the program funded two studies.

New Brunswick Mines and Quarries

PRODUCTION STATISTICS

The 2001 value of mineral production (including coal) in New Brunswick is estimated to be $789 196 489, representing an increase of 2% from the final value of $772 546 475 in 2000 (Table 3; Figure 3). The increase was due to the improved performance of the metals sector. Higher production of zinc and lead was sufficient to overcome generally lower metal prices. Further support came from a weaker Canadian dollar, whose value averaged US 64.58¢ for the year, down 4% from the previous year, when it averaged US 67.34¢.

The value of metals production during the year was $562 325 882, representing 71% of the Province's value of mineral production. Overall, the sector was up by 8%. Noranda's Brunswick mine, the Province's sole metals producer, experienced a notable improvement in throughput and metal production. CanZinco's Caribou mine remained shut down for the third full year after low metal prices and metallurgical difficulties had forced a suspension of operations in August 1998. Zinc continued to dominate the metals sector, with a value of $429 141 263, which represents 76% of the total value of metals. The value of zinc production increased approximately 8% from 2000. This is the more remarkable as the zinc price actually fell by over 21% between 2000 (51.2¢/lb. [U.S.]) and 2001 (40.2¢/lb. [U.S]). The drop in the average exchange rate of the Canadian dollar contributed to the value of production, as expressed in Canadian currency. Lead was a secondary contributor to the improvement in metals value, as production increased by 24%, while the price increased by 5% (21.6¢/lb. [U.S.], up from 20.6¢/lb. [U.S.] in 2000). The value of copper production fell by almost 13%, to $22 239 615, on the strength of a 13% decrease in the price (71.6¢/lb. in 2001 vs 82.2¢/lb. in 2000) and a 5% decrease in production. Antimony, bismuth, and cadmium continued to be produced as by-products from the Brunswick operation. The total value of the three by-product metals increased by 22%, chiefly because of increases in both the amount and price of bismuth produced. Gold production increased by 11.2%, resulting in a net increase in value despite a 2.9% drop in the price. Despite a slight increase in production, the value of silver fell by 4% as a result of an 11% decrease in the price.

The nonmetals sector of the industry contributed $170 390 891 (22%) to the value of mineral production, a 10% drop from the 2000 value. The largest contributor to the value of nonmetals production is potash. Both the value and quantity of potash decreased from 2000 levels. In addition to the regularly scheduled shutdown, the Potash Corporation of Saskatchewan's Penobsquis mine ceased production for six weeks in November to reduce excess inventory. Peat, the second largest contributor ($47 417 277) to the value of nonmetals production, represented 28% of the sector's value. After increases in the two preceding years, both the amount and value of peat fell. Salt and sulphur in smelter gas ranked next in value of production, with quartz and marl being minor contributors to the nonmetals sector.

The value of coal produced by N.B. Coal Limited in the Minto–Chipman area decreased by 13% to $19 781 000, as production fell by 28%.

Table 3. Mineral Production in New Brunswick, 2000 (F) and 2001(P)
(Source: Natural Resources Canada)

Commodity	Unit	2000 Final		2001 Preliminary	
		Quantity	Value ($)	Quantity	Value ($)
Metals					
Antimony	kg	*	*	*	*
Bismuth	kg	194 230	2 250 349	251 530	3 088 788
Cadmium	kg	169 710	90 965	211 478	160 089
Copper	kg	9 422 632	25 516 487	8 938 752	22 239 615
Gold	g	*	*	*	*
Lead	kg	64 490 165	43 466 371	79 998 184	57 998 683
Silver	kg	200 608	47 887 447	209 685	45 878 053
Zinc	kg	237 535 186	397 871 437	305 874 029	429 141 263
TOTAL			520 549 200		562 325 882
Nonmetals					
Marl	t	*	*	*	*
Peat	t	464 595	54 002 657	382 998	47 417 277
Potash	t	*	*	*	*
Quartz (silica)	t	*	*	*	*
Salt	t	*	*	*	*
Sulphur (in smelter gas)	t	109 939	7 491 212	99 607	4 251 782
TOTAL			189 360 937		170 390 891
Fuels					
Coal	t	229 300	22 843 000	164 700	19 781 000
TOTAL			22 843 000		19 781 000
Structural Materials					
Lime	t	*	*	*	*
Sand and Gravel	t	3 355 848	*	3 041 046	*
Stone	t	3 293 692	19 429 266	4 002 877	17 201 432
TOTAL			39 793 338		36 698 716
GRAND TOTAL (CDN)			$ 772 546 475		$ 789 196 489

* confidential information GRAND TOTAL 1999 (CDN $) $848 536 514 **February, 2002**

The value of production for structural materials (lime, stone, sand and gravel) decreased 8% to $36 698 716. Sand and gravel production was up 3%, while stone production decreased by more than 11%. These commodities provide the raw materials for the construction industry in New Brunswick.

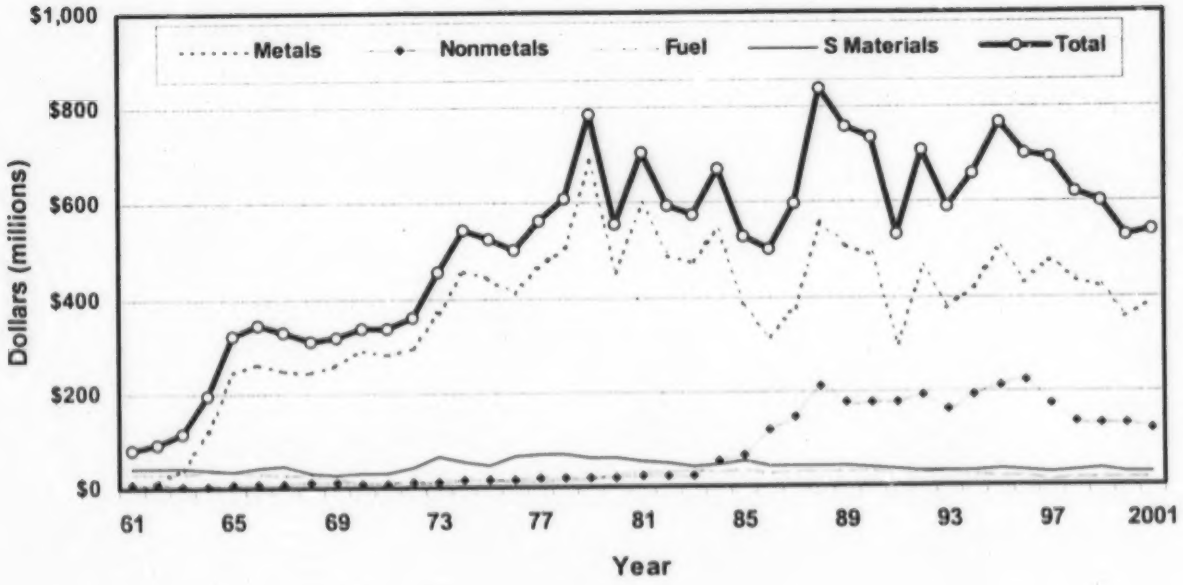


Figure 3. Value of mineral production in New Brunswick, 1961–2001. Source: Natural Resources Canada (1986 = 100). Abbreviation: S Materials – structural materials.

METALLIC MINERALS

Operating Mines

Noranda Inc. – Brunswick Mine continued to build on the successes of the previous year, increasing production to just under 9 900 t/d. In 1996, the company had reduced target production to 9000 t/d from the previous planned rate of 10 500 t/d because of a marked increase in seismic activity, which caused a major production area to become temporarily unavailable for mining.

In July 2001, a mass blast designed to relieve stress in the affected area was fired successfully. The other ground control activities begun in 2000 were also successful, resulting in the full rehabilitation of the production zone.

Operational problems late in the year led to a five-day shutdown on December 22.

Zinc accounts for approximately 76% of the value of Brunswick's production. Lead, copper and silver represent most of the remaining 24%. Both mine and smelter (Figure 4: 1a and 1b) ran largely uninterrupted throughout the year, with the brief disruption noted above. Overall employment remained at similar levels to those of the preceding year, at 830 regular staff and 135 contract employees. While there was a reduction in the number of full-time employees, contract employees' numbers were boosted by the need for major rehabilitation work underground.

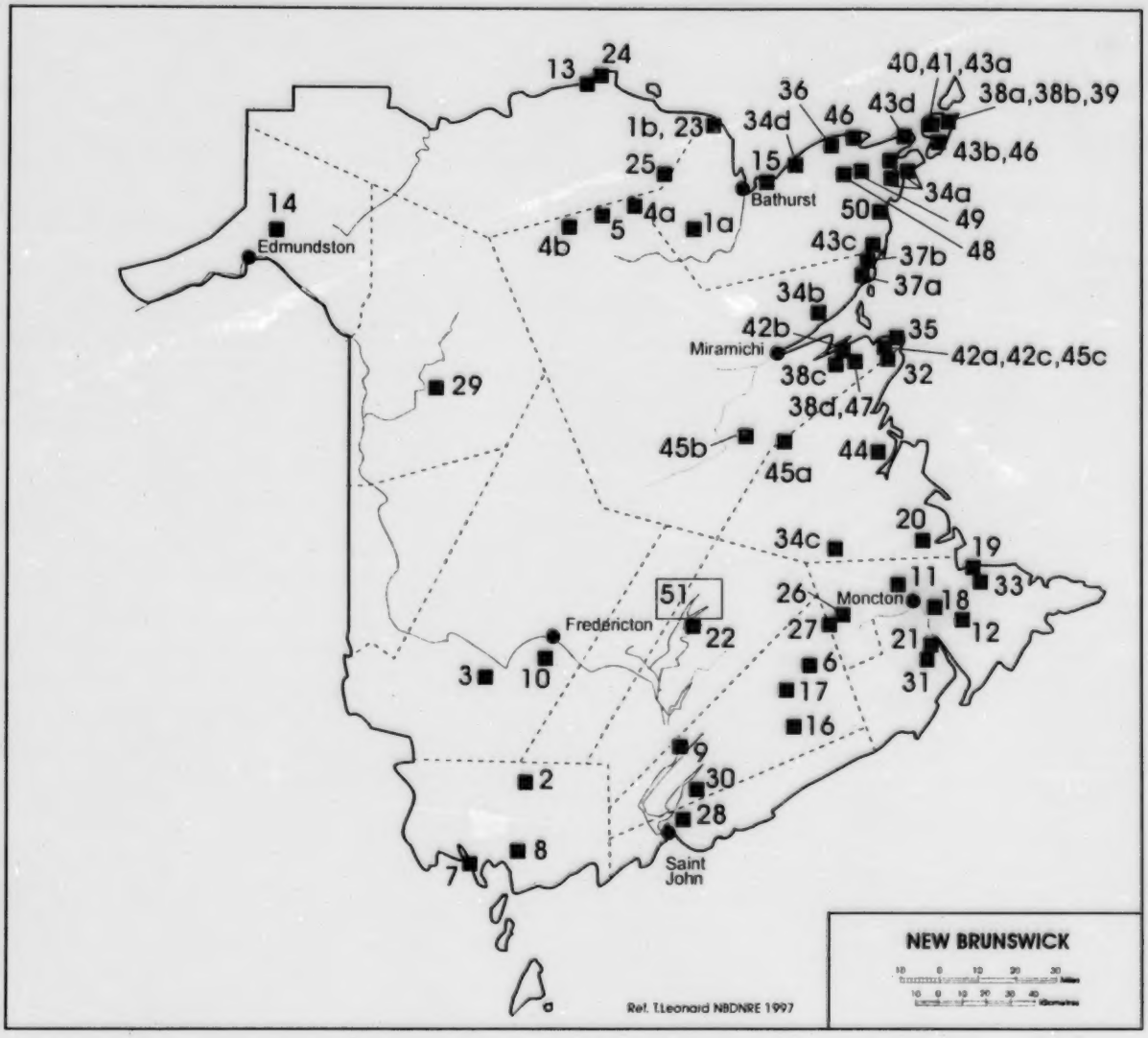


Figure 4. Mines and quarries in New Brunswick, 2001 (including two northern New Brunswick power-generating facilities).

1a. Brunswick No. 12 mine (Noranda Inc.–Brunswick Mine); *Zn, Pb, Cu, Ag*
1b. Belledune smelter (Noranda Inc.–Smelter)
2. Mount Pleasant deposit (ADEX Mining Corporation); *Sn, In, Zn, Bi, W*
3. Lake George mine (APOCAN Inc.); *Sb*
4a. Caribou mine (Caribou Mine Division of CanZinco Ltd.); *Zn, Pb*
4b. Restigouche mine (Caribou Mine Division of CanZinco Ltd.); *Zn, Pb, Ag, Cu*
5. Murray Brook mine (Murray Brook Resources Inc. (a wholly owned subsidiary of NovaGold Resources Inc.)); *Au, Ag, Cu*
6. Potash Corporation of Saskatchewan Inc. (New Brunswick Division); *potash, salt*
7. Port of Bayside (Charlotte County Ports Limited); *aggregate*
8. North of Lake Digdeguash (Jamer Materials Ltd., pit operator); *sand*
9. Lafarge Construction Materials; *sand and gravel*

Figure 4 (concluded)

10. Diamond Construction Limited; *crushed stone*
11. Moncton Crushed Stone, a Division of Modern Construction Ltd.; *crushed stone*
12. Acadia Crushed Stone Division of Modern Construction Ltd.; MacDonald Paving and Construction Limited; *crushed stone*
13. C.M. Stewart Company Limited; *crushed stone*
14. Clarence Daigle et Fils Ltée; *crushed stone*
15. Chaleur Silica Ltd. (a Division of the Shaw Group); *silica*
16. Atlantic Silica Inc.; *silica*
17. Nelson Monuments Ltd.; *dimension stone*
18. Maritime Stone Works Inc.; *dimension stone*
19. Smith Cut Stone and Quarries Limited; *dimension stone*
20. Bastarache Stone Quarrie; *dimension stone*
21. T.P. Downey & Sons; *dimension stone*
22. Grand Lake Flagstone; *dimension stone*
23. Belledune power-generating facility (N.B. Power)
24. Dalhousie power-generating facility (N.B. Power)
25. Elmtree Resources Ltd.; *limestone*
26. Lafarge North America Inc.; *limestone*
27. Graymont (NB) Inc.; *limestone*
28. Brookville Manufacturing Ltd.; *limestone, dolomite*
29. Plaster Rock area (Daniel F. Merrithew); *gypsum, limestone*
30. Kingsway Materials Ltd.; *aggregate*
31. Albert Mines area (Ken Whaley); *gypsum*
32. ASB Greenworld Ltd.; *peat*
33. Beausejour Peat Moss Inc.; *peat*
34. Compagnie de Tourbe Fafard Ltée; *peat*: (a) Shippagan; (b) Burnt Church; (c) Birch Ridge; (d) Stonehaven
35. Good Earth Canada Ltd.; *peat*
36. Grande Anse Peat Moss Co. Ltd.; *peat*
37. Heveco Ltd.; *peat*: (a) Tabisintac; (b) Brantville
38. La Mousse Acadienne (1979) Ltée; *peat*: (a) Couteau Road; (b) Petit-Shippagan; (c) St. Margarets; (d) Eel River
39. La Tourbe de Pigeon Hill Ltée; *peat*
40. La Tourbière de Petit-Shippagan; *peat*
41. La Tourbière du Centre de l'Île Ltée; *peat*
42. Le Groupe Berger Ltée; *peat*: (a) St-Camille; (b) Bay du Vin; (c) St-Camille
43. Le Groupe Qualité Lamèque Ltée; *peat*: (a) Lamèque (b) Haut-Lamèque; (c) Rivière-du-Portage; (d) Pokesudie Island
44. Malpec Peat Moss Ltd.; *peat*
45. Premier Horticulture Ltée—Division Rogersville; *peat*: (a) south and (b) west of Rogersville; (c) Escuminac
46. Sun Gro Horticulture Canada Ltd.; *peat*
47. Theriault & Hachey Peat Moss Ltd.; *peat*
48. Tourbière 2000 inc.; *peat*
49. Tourbière L.M. ltée; *peat*
50. Tourbière Tracadie ltée; *peat*
51. N.B. Coal Limited; *coal*

Suspended Operations

In 1997, *ADEX Mining Corporation* received a consultant's feasibility study for the development of the Mount Pleasant tin–indium–zinc–bismuth–tungsten deposit (Figure 4: 2). The conclusions were disappointing, as the estimated capital costs were too high to justify a production decision at that time. The property remains under care and maintenance.

APOCAN Inc. operations remain suspended at the Lake George antimony mine (Figure 4: 3). Problems with the hoisting system, as well as a slumping antimony price, forced a temporary shutdown in December 1996. Despite hopes that the price would recover sufficiently to allow a resumption of operations, high metals inventories in global markets continue to depress the price and in 2001 the mine was still under care and maintenance.

Caribou Mine Division of CanZinco Ltd., a wholly owned subsidiary of Breakwater Resources Ltd. commenced production from its two properties (Figure 4: 4a and 4b) in mid-1997, with the first ore going through the mill in July.

As part of the new operating plan, the Caribou concentrator was extensively modified and expanded. It was redesigned to produce separate zinc and lead concentrates, rather than a bulk concentrate as was the case when it last operated in 1990. Surface preparation of the Restigouche open pit (Figure 4: 4b) began in the fall of 1996. The first ore was produced in the spring of 1997. All ore from the Restigouche site was trucked to the Caribou mine site for processing.

Operations were suspended in September 1998 because of low metal prices and difficulties in achieving target mill recoveries. The company has periodically updated its operating plan with a view to reopening when metal prices have improved sufficiently.

Closures

Murray Brook Resources Inc. (a wholly owned subsidiary of NovaGold Resources Inc.) Under the impact of a substantially lower copper price, the company decided in 1998 not to proceed with further mining at Murray Brook (Figure 4: 5), despite some initially encouraging results from exploration drilling at the mine site. Full site reclamation was completed according to an approved plan in September 2000. The site continues to be monitored for any possible environmental effects.

INDUSTRIAL MINERALS

In 2001, New Brunswick's industrial rock and mineral sector was characterized by expansion at some production facilities, the establishment of new operations, and the pursuit of new products and resource development initiatives for both local and export markets. These activities are indicative of a diverse industrial rock and mineral sector that serves the strategic needs of New Brunswick's society.

Potash

Potash continued as a steady performer in 2001 (Figure 4: 6). Drilling on the potash lease of *Potash Corporation of Saskatchewan Inc. (New Brunswick Division)* near Sussex confirmed the presence of natural gas. The McCully gas project is being further explored by joint partners Corridor Resources Inc. of Halifax, Nova Scotia and Potash Corporation of Saskatchewan Inc. The drilling phase of the gas project intersected significant potash resources in an area of the lease not previously tested. Follow-up exploration is planned for this area in 2002.

Aggregate

The Province's aggregate resource development and utilization (Figure 4: 7–14) returned to pre-construction levels in 2001, following the completion of a regional natural gas pipeline and the 195 km Fredericton to Moncton four-lane highway that opened in the fall. Over the last 3–4 years, aggregate production for the primary phase of highway construction was approximately 8 500 000 t of rock, gravel and sand. As well, high-quality aggregate materials went into1 500 000 t of asphalt and 57 000 m^3 of concrete.

The export of New Brunswick aggregate materials has become a major industry, with shipments reaching a record level in 2001. For example, in 2000, an estimated 1 000 000 t of aggregate (crushed rock and sand) moved out of the Port of Bayside in southwestern New Brunswick (Figure 4: 7, 8), almost double that of 1999. Incoming gypsum coupled with outgoing aggregate shipments make up almost 90% of Bayside's port traffic. Interest continued in expanding aggregate exports from southwestern New Brunswick. It is suggested that, under favourable conditions, other sites in New Brunswick have potential as aggregate exporters, particularly adjacent to the Port of Belledune in northern New Brunswick (Figure 1: 38).

Silica

Silica operations in the province continued to supply a host of products to manufacturers and retailers (Figure 4: 15, 16). Recently uncovered fossil evidence at the Cassidy Lake silica deposit (*Atlantic Silica Inc.*) indicates that the unconsolidated quartz pebbles, sand and kaolinitic clay, located 25 km south of Sussex (Figure 4: 16), represents part of a hidden Cretaceous basin, similar to those in Nova Scotia that are often associated with kaolin.

Stone

New Brunswick's stone industry (Figure 4: 17–22) continued to show signs of growth and expansion in 2001. One operation, *Maritime Stone Works Inc.* near Moncton (Figure 4: 18), has been supplying cut stone to various construction projects locally and in the Saint John area. Maritime produces stone from its own quarry south of Moncton and has access to a stone quarry in Nova Scotia. As well, the company is considering expansion of quarry operations into the Miramichi area.

New detailing equipment has enabled the company to produce some fairly intricate stonework very quickly, work that would have taken much longer by a more traditional stone cutting process. Additional finishing equipment and several gang saws to be installed in a new building in the winter of 2002 should

continue to increase the efficiency of the operation. The company also began to market waste rock from its Scoudouc processing plant and quarry operations. This material finds use in retaining walls, fireplaces, facades, and a host of horticultural applications.

A new stone venture in the Hillsborough area (Figure 4: 21) produces five or six high-quality flagstone products, graded on the basis of size, thickness, and color. In 2000, *T.P. Downey & Sons*, a local lumber company, began to examine the production and marketing potential of laminated limestone. The products have been shipped to the United States and Ontario as well the regional Maritimes market. Recent mechanization has included the addition of several pieces of sorting and grading equipment, a stone splitter, and a computerized circular diamond saw to trim stone to specific sizes and shapes.

A newly established natural stone operation (*Grand Lake Flagstone*) near Grand Lake in south-central New Brunswick (Figure 4: 22) hand quarries various shapes and sizes of flaggy sandstone and provides an installation service.

Another notable development in the province's stone sector was the sale of *Nelson Monuments Ltd.* (Figure 4: 17), a longtime fixture in the New Brunswick stone business, to a Moncton-based business interest.

Limestone

New Brunswick's limestone sector consists of three major players and a couple of enterprises in the startup or early development phase. *Elmtree Resources Ltd.* is the only producer of limestone-related products in northern New Brunswick. Having been established over 20 years ago, the company supplies graded limestone products to Noranda's lead smelter at Belledune, and NB Power's Belledune and Dalhousie generating facilities (Figure 4: 23, 24) as well as to a host of other consumers in northern New Brunswick. In 2001, the company concentrated on extending quarry operations at its Sormany site, 35–40 km west of Bathurst (Figure 4: 25).

Two limestone operations are based in the Havelock area. *Lafarge North America Inc.*, formerly Lafarge Canada Inc., had a very good year, supplying more than half a million tonnes of stone primarily to Graymont (NB) Inc., to Maritime Road Development Corp. for the Fredericton to Moncton highway project, and to Lafarge's cement operation in Brookfield, Nova Scotia. Lafarge also provided crushing services and dry storage to Graymont for agricultural lime and a gypsum product. The company undertook a mapping and limited drilling project on its Springhill claims, 5 km southwest of its Havelock operation (Figure 4: 26).

A few kilometres west of Lafarge is the calcined lime and related limestone processing facility of *Graymont (NB) Inc.*, formerly Havelock Lime (Figure 4: 27). Under the terms of a limestone supply agreement, Graymont continued quarry operations at Lafarge's McGee quarry and is in the process of expanding it to the west. The company has also committed to establishing a new quarry site a few kilometres north of its Havelock processing facility. Similar to Lafarge, Graymont has benefited from the Fredericton to Moncton highway project, providing between 1 800 000 and 2 000 000 t of aggregate material from rock overlying the high-calcium limestone at its Samphill quarry site.

The dolomitic limestone operation of *Brookville Manufacturing Ltd.* at Saint John (Figure 4: 28) is the oldest producer of lime-based products in New Brunswick. Not only is the company a long-time

supplier of dolomitic agricultural lime throughout the Maritimes and elsewhere but it is also an important supplier of more than 40 graded aggregate and related products to regional markets. Company officials report steady production and sales in 2001.

In addition to these established limestone enterprises, a couple of new limestone development initiatives are in the works. *Plaster Rock Gypsum and Manufacturing Limited* is in the early stages of developing a small limestone property a few kilometres south of the village of Plaster Rock in northwestern New Brunswick (Figure 4: 29). The second is the newly established quarry operation of *Kingsway Materials Ltd.*, situated 25 km east of Saint John (Figure 4: 30). Kingsway currently produces a variety of size grades of aggregate from the limestone and adjacent gabbro body at its quarry location. At present, material is marketed locally but the company is interested in exports as well.

Gypsum

In 2001, production was fairly limited but more importantly, a mining lease was approved for *Plaster Rock Gypsum and Manufacturing Limited* in northwestern New Brunswick (Figure 4: 29). Initially, the company will be supplying agricultural gypsum to markets in northwestern New Brunswick and the northeastern United States. Another gypsum development initiative was submitted by *Mactaquac Mining Ltd.* for its Demoiselle property near Albert Mines in southeastern New Brunswick (Figure 4: 31).

Peat

Preliminary figures compiled by New Brunswick's Department of Natural Resources and Energy (DNRE) staff indicate that peat shipments in 2001 totalled about 13 500 000 standard bales with inventories standing at 3 200 000 bales early in the summer. About 15% of the production is shipped in a value-added form.

Nineteen companies were producing from 37 peatlands (Figure 4: 32–50) for a total area in production of 4200 ha. Most of the peat operations are located on Crown lands in the northeastern part of the Province. Five operations are located entirely on private lands. The f.o.b. value of shipments in 2001 is estimated to reach $95 000 000 (DNRE figures). Most of the production is sold in the USA (56%) with Japan being the second largest foreign export market (17%). Direct revenue to the Province in the form of royalties is expected to exceed $800 000 in 2001. During peak production, approximately 1100 people (including seasonal workers) were employed by the peat industry.

One company, *Jiffy Products (N.B.) Ltd.*, manufactures peat pots and peat pellets at its plant located in Shippagan, Gloucester County (Figure 4: 50). Seven primary peat producers also manufacture peat-based products, mainly growing mixes, for the professional horticultural industry.

In November 2001, the Minister of Natural Resources and Energy announced the new Provincial Policy on Peat Mining. The new policy is aimed at encouraging secondary processing of peat and developing value-added products.

HYDROCARBONS

N.B. Coal Limited, a subsidiary of NB Power, continued production in the Minto–Chipman area (Figure 4: 51). New Brunswick Department of Natural Resources and Energy figures indicate that a total of 163 466 t of coal was mined and 165 190 t of coal was shipped in 2001. The company continues to reclaim land disturbed by its coal mining operations.

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